

HD

594

25M35

NUNC COGNOSCO EX PARTE



TRENT UNIVERSITY
LIBRARY

BULLETIN OF THE DEPARTMENTS OF HISTORY AND
POLITICAL AND ECONOMIC SCIENCE IN QUEEN'S
UNIVERSITY, KINGSTON, ONTARIO, CANADA

NO. 58, JULY, 1929

Economic Aspects of the Proposed St. Lawrence Shipway

BY

D. A. MACGIBBON

The Jackson Press, Kingston

BULLETIN OF THE DEPARTMENTS OF HISTORY AND
POLITICAL AND ECONOMIC SCIENCE IN QUEEN'S
UNIVERSITY, KINGSTON, ONTARIO, CANADA

- No. 1, The Colonial Policy of Chatham, by W. L. Grant.
- No. 2, Canada and the Most Favored Nation Treaties, by O. D. Skelton.
- No. 3, The Status of Women in New England and New France, by James Douglas.
- No. 4, Sir Charles Bagot: An Incident in Canadian Parliamentary History, by J. L. Morison.
- No. 5, Canadian Bank Inspection, by W. W. Swanson.
- No. 6, Should Canadian Cities Adopt Commission Government, by William Bennett Munro.
- No. 7, An Early Canadian Impeachment, by D. A. McArthur.
- No. 8, A Puritan at the Court of Louis XIV, by W. L. Grant.
- No. 9, British Supremacy and Canadian Autonomy: An Examination of Early Victorian Opinion Concerning Canadian Self-government, by J. L. Morison.
- No. 10, The Problem of Agricultural Credit in Canada, by H. Michell.
- No. 11, St. Alban in History and Legend: A Critical Examination; The King and His Councillors: Prolegomena to a History of the House of Lords, by L. F. Rushbrook Williams.
- No. 12, Life of the Settler in Western Canada Before the War of 1812, by Adam Shortt.
- No. 13, The Grange in Canada, by H. Michell.
- No. 14, The Financial Power of the Empire, by W. W. Swanson.
- No. 15, Modern British Foreign Policy, by J. L. Morison.
- No. 16, Federal Finance, by O. D. Skelton.
- No. 17, Craft-Guilds of the Thirteenth Century in Paris, by F. M. Millett.
- No. 18, The Co-operative Store in Canada, by H. Michell.
- No. 19, The Chronicles of Thomas Sprott, by Walter Sage.
- No. 20, The Country Elevator in the Canadian West, by W. C. Clark.
- No. 21, The Ontario Grammar Schools, by W. E. Macpherson.
- No. 22, The Royal Disallowance in Massachusetts, by A. G. Dorland.
- No. 23, The Language Issue in Canada; Notes on the Language Issue Abroad, by O. D. Skelton.
- No. 24, The Neutralization of States, by F. W. Baumgartner.
- No. 25, The Neutralization of States, by F. W. Baumgartner.
- No. 26, Profit-Sharing and Producers' Co-operation in Canada, by H. Michell.
- No. 27, Should Maximum Prices be Fixed? by W. C. Clark.
- No. 28, Sir George Arthur and His Administration of Upper Canada, by Walter Sage.

(Continued on inside back page)

ECONOMIC ASPECTS OF THE PROPOSED ST. LAWRENCE SHIPWAY

BY D. A. MACGIBBON

THE construction of a shipway from the Great Lakes to the sea is an undertaking of such magnitude that there is room for sharp differences of opinion about its advisability. In so far as these differences of opinion are based on economic considerations, and are not of a selfish nature, they revolve around the study of three problems. These problems are the total cost of the enterprise, the net reduction in transportation rates to be expected, and the volume of traffic that will make use of the route. If these questions could be answered fully and completely the data would then be available to determine whether the project would yield an economic surplus or deficit.

In addition to these main questions, there are certain considerations surrounding the project that tend to complicate the issue. The project involves international co-operation and an international agreement dividing the costs of the enterprise. Hence from a Canadian standpoint the kind of bargain that can be made with the United States is of great importance in determining whether the project is a desirable one for this country to undertake. It must be recognized that in constructing the new Welland Canal for international use, Canada is already carrying what would amount to a considerable portion of her share of the burden of the larger enterprise. But it seems wiser to treat the problem purely as an economic one without regard to national considerations or to national boundary lines.

I. The Total Cost of the Enterprise

The costs of the navigation project, as distinguished from power, fall into four categories. These are: (1) the capital cost incurred directly in the construction of engineering works chargeable to navigation; (2) interest upon expenditures during the course of construction; (3) cost due to the fact that after the channel has been completed some time will probably elapse before what might be considered to be a normal volume of traffic will develop upon it; and (4) an allowance for property possessing physical integrity but rendered obsolete and economically valueless by the construction of the new channel.

When we turn to the first category we are confronted at the outset with the condition that certain costs are to be incurred jointly for the production of power and for navigation. The amount in question is estimated by the Joint Board of Engineers at \$125,542,000 or \$141,186,000, depending upon whether a double or single stage development is adopted in the international section of the river. To simplify our calculations, we will assume that the double stage development, recommended by the Canadian engineers, will be ultimately adopted. The problem is, to what should this expenditure be charged? Three courses are possible, each of which has its merits. Those protagonists of the project who hold that power should pay for navigation contend that the total sum should be assessed against power. This, in effect, means that the users of power would be asked, to this extent, to subsidize the users of navigation. On the other hand, since the whole design of the projected combined development makes power subservient to navigation, and since the engineers state that navigation will be better with a joint development, it can be plausibly argued that navigation should carry the joint costs. If this argument were accepted, navigation

would subsidize power. But there seems to be no reason why each division of the project should not carry its own load, and since neither power nor navigation can claim to be subsidiary to the other, the fairest method of dividing joint costs appears to be to charge one-half to power and one-half to navigation.

According to the estimates furnished by the Joint Board of Engineers, on this basis there would be added to costs directly chargeable to navigation approximately \$63,000,000 for joint costs. This would make the total estimate of capital construction costs approximately \$372,000,000. Of this amount \$181,000,000 would be chargeable to the Great Lakes division of the route and would include a sum of \$115,000,000 for the new Welland Canal. The total sum is calculated to provide a 27-foot channel from Montreal to the Upper Lakes. A sum of nearly four hundred million dollars is certainly enough to give pause to any responsible statesman before he commits his country to an enterprise of such magnitude. Moreover, one would undoubtedly feel easier about the project if one could believe that initial capital expenditure would be kept within present figures. But experience with engineering estimates does not lend support to such a belief. The Manchester Ship Canal cost more than twice the original estimate. Up to June 30, 1918, the Panama Canal cost the United States Government \$150,225,109, or 107%, more than Congress expected it would cost when building of the canal was authorized in 1906. In 1922, after considerable work had been done on the new Welland Canal, the cost of the completed project was estimated at \$90,000,000. To-day, the figure estimated for initial costs is \$115,000,000, and the canal is not completed. The larger the project the more glaring appears to be the discrepancy between initial estimates and actual costs. It can always be pleaded in extenuation that certain changes in design occurred, or that certain extras were not included in the original estimates, or that political

exigencies delayed construction. These explanations, while they may in some instances exonerate the engineer, simply illustrate the possibilities that exist. They suggest in this instance that present estimates, generously as they may be conceived to have been made, may prove quite inadequate to achieve the purpose in view. It is rather significant to observe that in the report of the Joint Engineering Board, where advances in estimated costs over those put forward by the earlier engineering board appear, they are partly explained as "being based on the higher unit costs indicated by the detailed studies made by the present board."

The estimates submitted do not contain, apparently, any provision for the deepening of harbours that would be necessary before the chief lake ports would be able to accommodate the larger vessels that could use the route. By "accommodate" is meant to receive and to despatch boats fully loaded. It is natural that expenditures for this purpose should escape consideration in the official enquiry. The federal governments of both Canada and the United States can claim that they will have done their duty to the project when they have provided the channels which would enable vessels of the desired size to move between the Great Lakes and the sea. Other constructions necessary, they may reasonably urge, should fall upon the communities desiring them. But from the standpoint of making a comprehensive survey of the economic cost of the scheme, the omission of information on this aspect is serious. The St. Lawrence shipway as a transportation route without proper terminals on the Great Lakes would be incomplete. That part of the necessary expenditures might fall elsewhere than upon the central governments does not permit their exclusion from consideration. In Canada and in the United States large sums have been expended on ports by the federal government. The money has been either spent directly or loaned to harbour boards to finance improvements.

How few naturally good harbours there are on the Great Lakes is not fully appreciated. Port Arthur was originally an exposed roadstead. The mouth of the Kaministiquia River at Fort William was cumbered with shoals upon which small boats would ground half a mile out. The natural entrance to Duluth was a winding channel over a shifting sandbar with an average depth of 9 to 11 feet. The natural outlet of the Milwaukee River had a depth of about $4\frac{1}{2}$ feet and an artificial channel had to be formed by piers and dredging. Chicago River constitutes the inner harbour of Chicago, before improvement a sluggish bayou or creek stagnant for the greater part of the year. Similar conditions with respect to harbours obtained on the other lakes. Only by a combination of government, municipal and private enterprise, pursued for many years and at great expense, have the chief ports on the Great Lakes been brought with difficulty up to an average minimum depth at the present time approximately of 20 to 22 feet.

To increase the depth of these harbours to that of the proposed channel, namely 27 feet, would involve large expenditure for which estimates are lacking. At least a dozen important ports would be affected and the amounts would vary with the difficulty of conditions. But the total would be a large sum. For instance, the capital cost of the proposed expenditures on the port of Oswego by the United States federal government, due to the opening of the new Welland Canal, is placed at \$8,500,000. The complete cost of harbour improvements on the Great Lakes, however, would not be chargeable to the St. Lawrence project alone since deepening these harbours would benefit also the heavy interlake traffic that now exists; but it should carry its share.

The expense of constructing the waterway must be met as the work proceeds. For the use of the money required, interest must be paid, and this interest, in turn, is compounded until the project is completed. It is universally conceded that

such interest is part of the cost of the construction of the waterway. The size of the interest bill will be determined by the rate at which money can be obtained, the length of the period of construction and the distribution of expenditures throughout the period. Various rates of interest have been used in making computations; the United States Interstate Commerce Commission holds that railways of good credit can borrow money at $4\frac{1}{2}\%$ and it makes an allowance of $1\frac{1}{2}\%$ to cover the cost of syndicating and of placing loans with investors. For the St. Lawrence it is presumed funds would be provided by government loans which might permit a somewhat lower rate. At the present time the yield on Dominion bonds is slightly over $4\frac{1}{2}\%$. Mr. Hoover in his reports uses the rate of $4\frac{1}{2}\%$, but apparently included in that figure the cost of marketing the securities; others have used 5% .

The length of time that will be occupied in construction is also a matter of opinion. The shortest period estimated has been eight years, but as the project has received more intensive study, ten, twelve and even sixteen years have been suggested. Since it is proposed to carry on the work concurrently at many points, it is likely that expenditure would be fairly evenly spaced throughout the years of construction. If we assume that funds can be obtained at $4\frac{1}{2}\%$, including costs of marketing, and construction lasts twelve years, the bill for interest on \$372,000,000 would amount approximately to \$107,000,000. If the rate amounts to 5% the interest bill would climb to \$122,000,000.

It is difficult to estimate the class of costs arising from the fact that after the channel has been completed some time would probably elapse before a normal volume of traffic would develop. It is at least likely, however, that a period of from three to five years would be required before adjustments to the new route would give it a normal flow of traffic. With a

private venture the losses incurred during this period of operation would be regarded as part of the costs of establishing the enterprise and would have to be provided for in the capitalization. They should properly be included in the capital costs in this instance also.

The opening of the shipway would render obsolete the present canal system. The amount of capital invested at present by the Dominion of Canada alone in the St. Lawrence route, exclusive of the new Welland Canal, is placed at \$85,000,000. This system would have to be maintained in a state of efficiency until the "change-over" took place. Moreover, new terminals are about to be constructed at Prescott that will, in part at least, cease to have a purpose when the deepened channel is opened to Montreal. It is not known yet what these terminals will cost. A figure put forward is \$10,000,000. The transfer elevator at Port Colborne would not be required to the same extent as at present. Part of the elevator capacity at Buffalo would suffer. At present a considerable volume of grain is handled through Georgian Bay ports. The volume would be reduced with corresponding losses in earnings to the railways and to the owners of the transfer houses. Thus we see that the opening of the new channel would create losses at various points which would be no less real because they would be difficult to estimate.

In making a rough computation of the total cost of the route there are included figures for the costs of the last three items; namely, losses during the initial period of operation, a share of the cost of harbour reconstruction for the ports of the Great Lakes, and the value of property rendered valueless, and losses due to reduction in value by the new construction. These figures are purely nominal since a careful and detailed estimate of costs of this nature remains yet to be made. It is likely that investigation would considerably increase the amounts set down.

Initial cost of construction of 27-foot channel from upper lakes to the sea	\$372,000,000
Interest during period of construction at 4½%	107,000,000
Losses incurred during development of traffic	20,000,000
Share of costs of harbour reconstruction	30,000,000
Value of property rendered valueless and losses due to reduction in value	30,000,000
Total costs chargeable to navigation with interest at 4½%	559,000,000
Total costs with interest at 5%	574,000,000
Annual charges:	
Interest on \$559,000,000 at 4½%	25,155,000
Costs of operation, maintenance and depreciation at 1½%	8,385,000
Total with interest at 4½%	33,540,000
Total with interest at 5%	37,310,000

This estimate of annual charges is merely one of many that have been made, some higher, others considerably lower. It is submitted chiefly to indicate the order of magnitude of the costs of the scheme, the nature of the costs that must be taken into consideration, the great variety of factors that must be examined before a computation can be made, and, especially, the need for further study of certain economic aspects of the project. It needs no further calculations to demonstrate that if the project could be completed in eight years and financed upon a 4% basis the total costs and annual charges would be greatly reduced.

II. Expected Savings in Transportation Rates

When the project was first presented to the public extravagant statements were circulated with regard to the nature of the vessels that could use the route and the savings that would accrue from lake ports becoming ocean terminals. A leading mid-western American daily newspaper pictured vessels like the *Mauretania* docking and embarking passengers at Chicago although the proposed depth of the channel is only 25 or 27 feet and the deep load draft of the *Mauretania* is 38 feet. Much was made of the statement that a 27-foot channel would enable over 80% of the world's ocean vessels to penetrate to the Great Lakes. This statement lost some

of its impressiveness when it was pointed out that this percentage included a large number of small ocean boats engaged in short sea trading along the coasts of Europe and that a 27-foot depth would exclude approximately one-half of the ocean's most efficient freight carriers. It was also confidently premised that the opening of this seven months water-way would lead to the designing and building of a new type of ocean carrier of "great freight capacity and with a relatively shallow draft." It need scarcely be pointed out that ship designers are ceaselessly working at the problem of obtaining safe and economical cargo ships of shallow draft. There are enough shallow harbours in the world at the present time to constitute a sufficient motive for a new type of vessel, if it could be obtained, without requiring the opening of the St. Lawrence to stimulate its production.

In the same way dazzling prospects of reductions in freight rates were held out to the people, especially the farmers, of the American middle west. A freight rate was calculated from Duluth to Liverpool that exhibited savings in carriage equal to the total cost at present of carrying grain by water from the head of the lakes and putting it on board ocean vessels at Montreal. This implied that ocean boats would be prepared to carry grain from Duluth to Liverpool at rates that they were actually receiving for carrying it from Montreal to Liverpool. Moreover, savings of this generous sort were calculated upon the farmers' entire grain production rather than upon what they sent to market. Even what was retained for seed or used to feed work animals was reckoned to show a saving. By this magic arithmetic the economic advantages of the deep waterway were shown to be so great that they would very quickly liquidate the total expenditure required to construct it.

At least three methods have been employed to calculate the savings expected to be realized through a reduction in

freight rates. The economies of ocean transport and the advantages of a continuous voyage from lake ports furnish the material for one type of investigation. Then there is the possibility that the cheaply operated lake carriers, by making lower rates, might carry to Montreal where transfer to the ocean vessel could take place. How far they would be able to do this would depend upon the savings to be secured by sending the large lakers down the river. This also becomes a matter of investigation. Finally, in conjunction with these studies, savings have been estimated by concentrating attention upon the reduction in costs achieved by a reduced number of lockages and the elimination of transfer expenses between the upper lakes and Montreal.

An estimate of savings based upon the difference between the present rates of transportation down the St. Lawrence and those rates which are expected to prevail if the deepened channel is opened, applies only to the volume of traffic that at present finds it profitable to seek the route. When savings are reckoned upon the additional volume of traffic expected to develop, the measure of saving would be the difference between the total rate from the point of initial shipment to the foreign port by the new St. Lawrence channel and the rates by routes which are now cheaper than the present St. Lawrence route. This means that in calculating savings upon much traffic expected from American points the basis is the difference between the expenses of shipment by New York or other Atlantic seaboard ports and by the new route.

The factors involved are the comparative distances by alternative routes, the length of rail haul in each instance, terminal expenses, the type of ocean carriers possible to employ and insurance rates. The channel of the St. Lawrence is almost in a direct line of navigation to northern European ports but to many people who have not given special thought to the subject it comes as a surprise that American lake cities

are slightly over 400 miles nearer to Liverpool by the St. Lawrence route than they are by New York. The shortest mileage from Pittsburg to Liverpool would be by Cleveland and the St. Lawrence. The advantages in distance possessed on voyages to northern European ports do not apply to the Mediterranean and the voyage is very much longer by the St. Lawrence when the destination is the West Indies or South America. The actual distance of a voyage, however, is of less importance than the amount of cargo offered, the probability of cargo both ways, the assortment of cargo as between deadweight measurement, port charges, loading and discharging expenses.

The length of rail haul from many United States inland points to lake ports is shorter than to the Atlantic seaboard, but the importance of terminal costs as a factor in railway rates reduces the actual difference in the amount charged. The terminal expenses at the lake ports, in some instances at least, would be lower than at tidewater ports. This is especially true of New York where port expenses are very high. Up to this point the comparison is in favour of the St. Lawrence route.

When it comes to the type of ocean carrier available, the ports on the Atlantic seaboard have a distinct advantage. Approximately one-half of the larger freight carriers would be excluded from the St. Lawrence deep waterway. New York, moreover, can offer a variety of steamer services to all parts of the world that no other port on the North American continent can equal. At the present time she holds her supremacy as a port in the face of a freight differential of two cents per hundred pounds in favour of Philadelphia, and three cents in favour of Baltimore and Norfolk.

Apart from other considerations, the greater dangers involved in the St. Lawrence route lead to heavier insurance charges and thus to higher costs of shipment than by New

York. Canadians are inclined to maintain that these higher insurance rates are an example of wilful discrimination against Canada. This view finds no support in the investigations of the Imperial Shipping Committee, certainly not a hostile body. For a six year period, ending December, 1924, they found the proportion of total losses per 1,000 of ships using the St. Lawrence route to be .56, and for the United States north Atlantic seaboard .03. The proportion of strandings for New York alone per 1,000 ships was 1.31; for the St. Lawrence and its approaches 5.05. Here we have the basis of higher insurance charges.

A marked superiority that New York possesses over any other port on the Atlantic seaboard is a balanced load factor. Although the outbound cargoes from the United States markedly exceed the inbound, yet there is almost an even balance between the amount of freight received and shipped out at the port of New York. In view of the large proportion of bulk traffic that is expected to move from the Great Lakes region by the St. Lawrence, it is unlikely that there will be a favourable load factor for this route. Estimates of the volume of traffic available indicate a load factor of 50 to 100. It is well known that the lack of traffic from Great Britain to Canada makes this the "worst balanced sea route of the empire." A reasonable balance between inbound and outbound cargoes is an important factor in creating low ocean rates. New York enjoys this great advantage.

The question remains whether ocean boats will find it more profitable to enter the Great Lakes or transfer cargoes at Montreal. Terminal charges form a large part of the expenses of vessels. The late Sir William Petersen stated in evidence before a parliamentary committee that the total expense of an actual trip for one of his vessels from Hull to Montreal and thence to Hamburg with grain would be £3,543. Of this amount the actual port charges at Montreal were

£1,313. and he estimated port charges at Hamburg at £550. On this basis terminal charges represented over 50% of the entire expenses of the trip. From facts of this nature it is argued that it will be profitable for ocean vessels to proceed direct to lake ports for cargo and thereby eliminate Montreal charges.

Against this advantage must be placed the dangers of restricted navigation and frequent lockages, the expense of additional pilotage and the probability of increased insurance. Scandinavian ocean vessels operating on the Great Lakes are now facing additional insurance charges after the underwriters have had several years' experience of the hazards involved. These factors militate against the suggestion that ocean boats would be willing to enter the lakes without a substantial increase in rates over what they could obtain from Montreal. On the other hand, the undeniable superiority of the lake carrier in its own field consists in cheaper construction costs and relatively low overhead combined with remarkable capacity for freight carriage. This capacity is due to there being no need to carry cumbersome loading and unloading machinery and since the voyages are short they are able to operate with reduced bunker space. All these considerations seem to make it likely that lake carriers would retain a place in the export traffic by carrying freight to Montreal. But if ocean boats could secure a cargo inbound they would probably enter the lakes and return fully laden.

Various studies have been made attempting to determine the significance of all these factors and to arrive at the extent of the savings in freight Pool state^{ve} achieved by the use of the St. Lawrence if cop were made dur^{espect} to rates on wheat, the estimates of February and March range from 3 to 5 cents per bushel, withlosed. The Wheat of informed opinion in favour of the land governed the rawould involve a saving of from \$1.12 to \$ably across the A Estimates of the saving

upon other types of cargo show a similar range. For some types of cargo the estimated saving is placed as high as \$2.00 per ton. Canadian government engineers estimated savings at \$15,000,000 on 8,050,000 tons of traffic. This would amount to approximately \$1.86 a ton. Very recently an independent detailed estimate of the various kinds of Canadian traffic expected to move through the waterway was made.¹ It exhibits an average rate of saving upon 7,675,000 tons of traffic of approximately \$1.28 per ton. These predictions are very much more modest than earlier estimates, so widely heralded to the public, of all-round savings of \$3.00 to \$4.00 per ton.

III. Expected Volume of Traffic

The main factors that will determine the volume of traffic that would make use of a St. Lawrence waterway are: (1) the quality of the transportation services that the deepened channel would make possible; (2) the length of the season during which these services would be available; (3) the amount of freight able to move within this period.

The route will offer a slow service. The speedier freight boats are of large size and on account of depth restrictions would be unable to use the route. Moreover, the channel itself, with its frequent lockages and restricted navigation, would delay movement. A more rapid means of shipment will be available by rail to tide water and thence by mixed or cargo liner to destination. It seems certain that goods requiring despatch will utilize faster routes in preference to the St. Lawrence. As a rule goods of high value are handled by the speediest means of transportation available. We have an illustration of this in shipments of raw silk. When such shipments are discharged at Vancouver they are moved across the continent by express freight trains at high speed to the mills.

¹L. R. Thomson, M.E.I.C., Proceedings of the Engineering Institute of Canada, February, 1929. The St. Lawrence Problem, page 9.

Commodities of high value are said to "bear" a relatively high rate of freight per ton but in return they demand speed in transportation. Traffic managers are well aware of this fact. The traffic manager of the Canadian Merchant Marine in explaining operating deficits on government vessels to a parliamentary committee in 1925 accounted for operating losses on the ground that the government had slow vessels and could not attract the higher class of traffic. . . "I am telling you," he said, "we can not draw it for our steamers, taking 12 to 14 days for the passage, against the steamers that are making the passage in eight or nine or even eleven days.' All transportation experience indicates that only bulk commodities or commodities which can not be handled easily at terminals would find it advantageous to use the route.

The notion that the rate of flow of export or import commodities would be greatly increased during the season that the channel is open in order to take advantage of the route appears to be fallacious. During the course of the year Europe absorbs a large volume of foodstuffs. But the volume flows thither at a remarkably even rate because it moves in response to customers' demand. Dealers in Europe do not stock up beyond a certain point nor do they provide large storage facilities at their home ports to make accumulation possible. They prefer to bring commodities in week by week and not to tie up their capital or incur carrying charges by putting their imports in store for a lengthy period. Before their limited stocks become depleted they place further orders abroad and in this way maintain a continuity of supplies. The officials of the Wheat Pool state that large deliveries of wheat of the 1927-28 crop were made during the months of December, January, February and March when the St. Lawrence route would be closed. The Wheat Pool quickly learned that consumers' demand governed the rate at which stocks could be moved profitably across the Atlantic. The conclusion

follows that of the total volume of freight suitable to move by the St. Lawrence route, the proportion that actually will move by that channel will be determined by the length of period the waterway is open each year.

Since the St. Lawrence will be closed for approximately five months of each year shippers will have to make use of other facilities of transportation for that period. This consideration is likely to prove decisive in persuading a fairly large group of shippers, who are near the margin of indifference with respect to which route they will use when both are available, to continue their shipments by the Atlantic seaboard. It is possible they may be able to exact some concessions from the railways as the reward of loyalty, but the disturbances to forwarding arrangements created by the transfer in the spring and autumn from one avenue of transportation to another would work against any change. These disturbances would be accentuated if the railways adopted the policy of making a difference in winter and summer rates to meet water competition.

These factors enter into a determination of the volume of traffic that will make use of the channel. The United States Department of Commerce estimates "potential tonnage available" in the United States at 6,400,000 tons of export traffic, 3,000,000 tons of import traffic and 7,000,000 tons of inter-coastal and coastwise, or a total of 16,400,000. Canadian engineers of the Department of Railways and Canals estimate Canadian traffic at exports of 5,450,000 tons and imports at 2,600,000, or a total for Canada of 8,050,000. This would give a grand total of 24,450,000 tons. Government figures are apt to be tainted with official optimism. An independent study for Canada places the volume of traffic to be expected at 7,675,000 tons. To reach a satisfactory conclusion it is necessary to go beyond general estimates to an investigation into the amount of traffic likely actually to move by the route

at given freight levels. Such an estimate demands an intensive study of the requirements and annual cycle of activity of each kind of industry before reasonably reliable figures can be secured.

The significance of these estimates may be emphasized by a comparison with the traffic on the Panama Canal. The present traffic by the Panama is approximately 29,000,000 tons for a 41-foot channel with a twelve months service. On the St. Lawrence 24,450,000 tons is suggested for a channel 27 feet deep offering a seven months' service. With an average daily volume of the density estimated for the St. Lawrence throughout the year the Panama Canal would show a total traffic of approximately 42,000,000 tons annually. On the other hand, if the St. Lawrence developed an average daily volume of traffic as dense as the Panama now enjoys, after fifteen years of operation, its total for a season of seven months would be nearly 17,000,000 tons. The writer is of the opinion that 17,000,000 tons would not be an unreasonable estimate of the traffic to be expected upon the St. Lawrence for a considerable duration of time.

IV. Summary of Results

Our survey shows estimates of annual charges ranging from \$33,540,000 to \$37,310,000. Estimates of expected savings on transportation rates vary between \$1.28 per ton and \$1.86 per ton with the weightiest opinion supporting the lower figure. The estimated volume of traffic may be said to be between 15,000,000 tons annually and the official estimates of 24,450,000 tons. It will be obvious that these figures can be combined in various ways to support quite different conclusions. If the engineers did not exceed their estimates of capital cost, if savings approximated \$1.86 per ton and if there were 24,000,000 tons of traffic annually, there would be a substantial gain in constructing the channel. But even with

this volume of traffic, if savings did not exceed \$1.28 per ton there would be an annual deficit upon the route. Finally, if the route did not achieve a traffic density greater than either the Suez or the Panama, even though savings reached the upper figure of \$1.86 per ton, there would still be a deficit to be met from taxation by the two countries.

V. The Incidence of Costs and of Benefit

For many years it has been an accepted part of Canadian public policy to operate canals free of tolls to the users. This fact would make it difficult politically to consider establishing a system of tolls on the St. Lawrence deep waterway designed to take care of the annual charges arising from capital cost, operation and maintenance. Even if this objection were overcome the establishment of a system of tolls that distributed the burden fairly among the users would be a task of considerable difficulty.

In view of these circumstances, if the route were operated free of tolls, the only way of arriving at an approximate estimate of the advantages to be gained from construction would be to compare the sum of the annual charges, which would have to be defrayed from the public treasuries of the two countries concerned, with the sum of the calculated savings to shippers from reductions in freight charges. To make this phase of the study complete, however, it would be necessary to trace and estimate the effects of the burden of additional taxation imposed upon enterprise and industry and to balance these evil effects against the benefits expected to be realized from subsidizing navigation users on a large scale. Such a study would be very difficult to make and will not be attempted at this time. But it is necessary to mention this aspect of the problem since the specific dynamic benefits of making water transportation available are very often greatly magnified

without there being any apparent perception of the fact that canal transportation is usually subsidized transportation purchased at the expense of heavier taxation that works a general ill to the economic life of the whole country. In this instance the whole of Canada and the United States would bear the burden of taxation while the chief beneficiaries would be Ontario and the Lake cities of the United States. Western Canada would probably derive some advantage but this advantage would probably be balanced by an increase produced in the field of domestic freight rates.

- No. 29, Canadian Federal Finance—II, by O. D. Skelton.
- No. 30, English Courtesy Literature Before 1557, by Fred. B. Millett.
- No. 31, Economics, Prices and the War, by W. A. Mackintosh.
- No. 32, The Employment Service of Canada, by Bryce M. Stewart.
- No. 33, Allenby's First Attempt on Jerusalem: A Chapter in Scottish Military History, by J. L. Morison.
- No. 34, John Morley: a Study in Victorianism, by J. L. Morison.
- No. 35, Elizabethan Society—A Sketch, by J. B. Black.
- No. 36, The Condensed Milk and Milk Powder Industries, by F. W. Baumgartner.
- No. 37, Nationality and Common Sense, by J. L. Morison.
- No. 38, Kapuskasing—An Historical Sketch, by Watson Kirkconnell.
- No. 39, Palestine in Transition from War to Peace, by A. E. Prince.
- No. 40, Business Cycles and the Depression of 1920-1921, by W. C. Clark.
- No. 41, Captain John Deserontyou and the Mohawk Settlement at Deseronto, by M. Eleanor Herrington.
- No. 42, First Days of British Rule in Canada, by William Smith.
- No. 43, Sir Alexander Mackenzie and His Influence on the History of the North West, by Walter N. Sage.
- No. 44, The Faculty of Arts and Business Training, by J. M. Macdonnell and W. C. Clark.
- No. 45, The United Empire Loyalist Settlements Between Kingston and Adolphustown by R. W. Cumberland.
- No. 46, Pioneer Problems in Upper Canada, by R. W. Cumberland.
- No. 47, Government Intervention in Labour Disputes in Canada, by Margaret Mackintosh.
- No. 48, The Immigration Problem for Canada, by Charlotte Whitton.
- No. 49, Gibbon Wakefield and Canada Subsequent to the Durham Mission, 1839-1842, by Ursilla N. Macdonnell.
- No. 50, The Coal Resources of Canada, by M. J. Patton.
- No. 51, The Canadian Wheat Pools, by W. A. Mackintosh.
- No. 52, Colonial Participation in Imperial Wars—Australasia, by C. D. Allin.
- No. 53, The Bison and the Fur Trade, by R. O. Merriman.
- No. 54, Robert Gourlay, by Wm. Smith.
- No. 55, Canadian Federal Finance, by J. S. Prentice.
- No. 56, Queen Anne's Canadian Expedition of 1711, by William Thomas Morgan.
- No. 57, The Problem of the Upper St. Lawrence, by Francis King, K.C.
- No. 58, Economic Aspects of the Proposed St. Lawrence Shipway, by D. A. MacGibbon.

Copies of these Bulletins may be had by writing to Queen's Quarterly,
Queen's University.

Date Due

~~JAN 1 1977~~	~~FEB 12 1976~~	~~MAY 7 1982~~
~~JAN 13 1977~~	~~FEB 12 1976~~	
~~FEB 13 1977~~	~~APR 29 1977~~	
~~MAR 14 1977~~	~~FEB 5 1983~~	
~~FEB 26 1984~~		
~~MAY 1 1977~~	~~MAR 17 1983~~	
~~JAN 13 1984~~		
OCT 29 1994		
OCT 05 1995		
		OCT 22 1985
PRINTED IN U. S. A.	bdy	CAT. NO. 23233

HD 1694 .A25 M35

MacGibbon, D.A.

Economic aspects of the propos

010101 000



0 1163 0055850 3

TRENT UNIVERSITY

HD1694 .A25M35

R

MacGibbon, Duncan Alexander

...Economic aspects of the
proposed St. Lawrence shipway.

ISSUED TO

005857

Bro-Dart
INDUSTRIES

Newark ■ Los Angel
Toronto Ontario

